

(19) World Intellectual Property Organization
International Bureau



PCT

(10) International Publication Number
WO 2005/013033 A3

(43) International Publication Date
10 February 2005 (10.02.2005)

(51) International Patent Classification:
G11B 9/10 (2006.01)

(21) International Application Number:

PCT/US2004/019871

(22) International Filing Date: 18 June 2004 (18.06.2004)

(25) **Filing Language:** English

(26) **Publication Language:** English

(30) Priority Data:

60/484,632 3 July 2003 (03.07.2003) US

(71) Applicant and

(72) **Inventor:** OAKLEY, William [US/US]; 554, Greenmeadow Way, San Jose, CA 95129 (US).

(74) **Agent:** VON TERSCH, Glenn, E.; Perkins Coie LLP, 101 Jefferson Drive, Menlo Park, CA 94025 (US).

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM,

(88) Date of publication of the international search report:

28 May 2009

(54) Title: ARRAY OF CNT HEADS

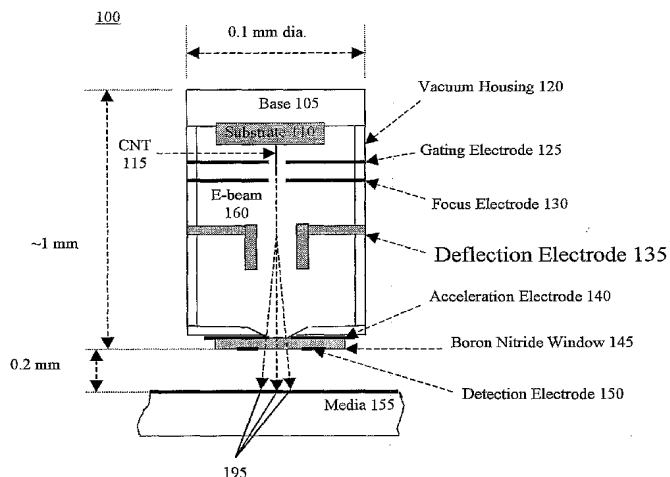


Figure 1

(57) Abstract: A method and apparatus for adaptive read and read-after-write for carbon nanotube recorders is described. In one embodiment, the invention is an apparatus. The apparatus includes an array of carbon nanotube heads. The apparatus also includes a substrate upon which the array of carbon nanotube heads are mounted. In an alternate embodiment, the invention is a method. The method includes determining a predetermined track to operate on. The method also includes deflecting a beam of a carbon nanotube head of the array of carbon nanotube heads toward the predetermined track.

WO 2005/013033 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/19871

A. CLASSIFICATION OF SUBJECT MATTER

IPC: **G11B 9/10**(2006.01)

USPC: 369/101

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 369/101

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
none

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
none

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
y	US 4,760,567 (Crewe) 26 June 1988 (11.08.1986), column 7, line 42 to col. 9, line 65, Figs. 1-2.	1-8
y	US 2003/0007443 (Nickel) 09 Jan 2003 (09.01.2003), paragraphs [0011]-[0016], Fig. 2).	1-8

☐

Further documents are listed in the continuation of Box C.

☐

See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search

17 June 2008 (17.06.2008)

Date of mailing of the international search report

28 JUL 2008

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Authorized officer

Joseph Feild

Telephone No. (703) 305-3900

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/19871

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 9
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
Please See Continuation Sheet
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
 2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of any additional fees.
 3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
 4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
- Remark on Protest**
- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
 - ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
 - ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/19871

Continuation of Box II Reason 2:

Claim 9 is lacking clarity under PCT Article 6 because claim 9 indefinite for the following reason(s): The claim fails to distinctly and particularly point out the subject matter as to what is included or excluded by the claim language.